

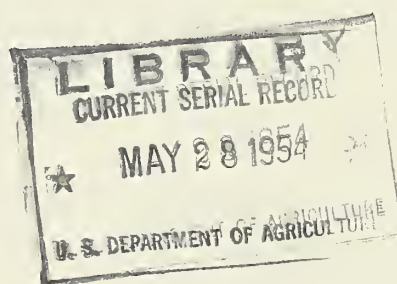
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MARKETING ACTIVITIES



U. S. DEPARTMENT OF AGRICULTURE
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Problems And Possibilities In The Marketing Field

By Oris V. Wells

". . . As the effects of more than a decade of defense and inflationary pressures wear off, it is clear that those who produce or handle farm products must be increasingly interested in the markets for these products, in the efficiency with which such products are moved into market, and in the returns which are left to the farmer after handling, processing, and selling charges are deducted from what consumers are willing to pay for the finished product.

"That there is an increasing interest in marketing is evidenced by two recent developments. The first of these was the enactment, without a single dissenting vote in either the House of Representatives or the Senate, of the Research and Marketing Act of 1946, Title II of which was specifically designed to provide new funds and new emphasis in the marketing field. The second was the establishment by Secretary of Agriculture Ezra Taft Benson of the Agricultural Marketing Service (for work on the domestic marketing problems) and the Foreign Agricultural Service (for similar attention to farm marketing problems in the foreign field) in the recent reorganization of the Department. . .

Other Problems Get More Attention

". . . Strangely enough, we are all inclined to talk mostly about other problems -- various production problems, and perhaps more often than anything else these days, surpluses, farm price supports, and controls. I certainly do not want to suggest that such problems should not be discussed nor that price support and related programs are not important. They most assuredly are, as indicated by the interest of farmers, farm organizations, officials of the USDA, the Congress, and the President.

"Still, we must realize that most of the farm price support and related programs are essentially efforts to buy time, to try to find some way of holding marketings and prices at some reasonable level until such time as our increasing population and expanding economy has provided a more satisfactory market. . . .

"Market maintenance and development, then, becomes basic. And although marketing activities are neither so dramatic nor so glamorous as some of those in other fields. . . . their effects are much more durable. Farmers and those who work with them must give increasing attention to questions of marketing efficiency and market development.

"We want an efficient marketing system -- efficient in terms of a set of institutions which will move farm products from farm to final consumer

either in the United States or foreign countries with dispatch and at reasonable costs. . . Under the Research and Marketing Act of 1946, the State agricultural colleges as well as the U. S. Department of Agriculture, have gradually begun to build up their marketing research. Business institutions and commodity organizations are also showing an increasing interest here. But we are still a long way from...the stage which has been reached with respect to production practices and production economics, either at the research or the extension level.

". . . The real burden of building a more efficient marketing system falls on the marketing agencies themselves, spurred on not only by the desire to do a good job but also by competitive pressures which channel increased returns to those who perform most efficiently. One of the toughest problems in this field is the question as to how new and more efficient methods may be more widely introduced at a more rapid rate. There is also the question as to how the benefits from such new or more efficient methods are distributed, both between groups and over time. Do the returns stay mostly with the business operators, or do they go to labor, to consumers, or back to farmers? Actually, of course, we all benefit with the particular answer depending upon many factors, some of which need to be better understood.

Marketing Should Be Geared To Dynamic Economy

"By what means do farmers and those who handle farm products hold old markets, or build new markets within the highly competitive framework in which they most likely to operate over the years ahead? . . .

". . . The . . . problems with which we are faced in America, including those with which farmers are faced, have to do with a dynamic economy -- that is, an economy which is constantly changing, where new techniques are being introduced, where new demands are being created, where we most often don't know the answers, and where about the only constant factor is the desire for and the need of growth.

"Surely one of the key factors in this dynamic economy, the factor which leads to growth, is the constant push on the part of American businessmen for new markets and their efforts in many cases to create a desire for more of the same product, for a better-quality product, or for products which did not previously exist.

"Here is an area which farmers on many occasions have tended to neglect. We not only take food for granted but it also so happens that food and the more common items of clothing are things which the ordinary housewife buys every day or every week.

"The typical housewife . . . (is) much more price-conscious, is a much keener shopper for those things which she constantly buys, especially where they represent the largest single daily or weekly outlay within a limited family budget. Not only do most Americans take food and the more common items of clothing which are fabricated from farm products for granted, but . . . farmers follow their own products only a small part of the way to the final market.

". . . Our better-known business concerns in the U. S. not only try to do an efficient job of producing automobiles, or TV sets, or electric toasters, or washing machines, or movies, or what have you -- they also follow the merchandising of these products through to the final consumer. But the farmer sells to a local assembler, who sells to a processor who in turn sells to wholesalers or perhaps direct to the retailer, with quite a bit of transportation intervening all along the line.

"We have developed through the use of grades and standards, and through the use of various preserving and processing techniques, ways of getting a remarkably high-quality product to the final consumer. But with only a few exceptions, it is still a fact that farmers do not follow or help merchandise their products through the system. There are some exceptions. Pacific Northwest apples and California oranges are two. . . There are some other examples -- enough to lead to two general conclusions:

"(1) Market development work is well worth while, and (2) for it to go forward successfully in the case of farm products, it requires not only research and technical assistance but equally the cooperation of the producers and the main industries handling the particular product.

Marketing Aids Needed

". . . What in detail is recommended over and beyond what we are now doing? Those of us in the new Agricultural Marketing Service, and others . . . have some ideas:

"We want to see more attention centered on agricultural outlook and market adjustment activities on the part of farm organizations, and the State Colleges, and the U. S. D. A. We want to strengthen our marketing services -- market news and other statistical services, our grading and inspection work. We want to develop a strong marketing research program with attention to both service activities, which help toward doing a job now, as well as longer-run basic research. We want to improve and strengthen the marketing agreements programs, and use Section 32 funds as efficiently as possible in helping move farm products, especially the perishable products, over and above the quantities now moving in normal channels of trade. We want to find ways of assisting farmers and handlers in this whole field of market maintenance and development . . .

". . . The two really essential ideas I want to leave . . . are:

"(1) There is no substitute for markets. What we can do in the marketing field is not only likely to be less costly but also more enduring over the years than what is done in some other fields, important as price supports and related stabilization activities are.

"(2) Successful marketing is a team job. Those of us in Government service can assist. But farmers and businessmen handling farm products must carry the real burden. They must find ways of working together for their common good."

* * *

Speedier Sorting

By William H. Elliott and Joseph F. Herrick

A new type sorting table increases efficiency and reduces costs of grading apples. It could have wide application to similar work for other fruits and vegetables and for the visual inspection of certain industrial products. The table was developed through research by the Washington State Apple Commission under an Agricultural Marketing Act contract with the U. S. Department of Agriculture. The contract is sponsored and administered by the Transportation and Facilities Branch, Agricultural Marketing Service, USDA.

The new sorting table consists of a series of closely spaced rollers which revolve as they move forward. This turns the product, which rides on top of the rollers, so that all of its surface is visible as it moves toward the sorter. Both the forward speed and the rate of rotation of the rollers are variable and can be controlled. Other improvements reduce the amount of handling necessary in sorting fruit and equalize the work of individual graders.

Published reports of the Department covering previous research in this field have dealt with methods and costs of loading apples in orchards, and handling methods and equipment in apple packing and storage houses. Awaiting publication are reports on the handling of empty apple boxes and innovations in apple handling methods and equipment. Although this research has been conducted in the Pacific Northwest, the results are applicable to apple handling in other localities and to the handling of some other agricultural commodities.

During the past two seasons, research activities have been directed to apple sorting, sizing, and packing operations which account for a big part of the cost of turning out packed fruit. Proper sorting, sizing and packing result in better consumer acceptance and a more salable product.

Sorting also is important because it is the "pace-setting" operation in the packing line. The rate at which the fruit passes over the sorting table generally determines the rate at which it is sized and packed. Any increase in efficiency in sorting not only reduces the direct cost of that operation, but indirectly lowers costs of other packing line operations.

Currently, 3 basically different types of apple sorting tables are used in Washington State. Two of them - the belt type and the spiral roll - are in common use. The other - the reverse roll - was introduced during the past few years. All three are made so that sorters can stand or sit on either side of the table, and those on each side accomplish the same work. (See illustrations, page 9.)

To develop background data for improving apple sorting methods, and because improvement of all three types of tables was not practical, research workers first made an objective evaluation of each to determine which held the most promise for improvement.

The reverse roll table was found to be the most efficient, providing more rapid and easier inspection. By rotating the fruit as it moved to the sorters, it permitted free visual inspection on the table and the rollers provided regular spacing between the apples. The fact that one grade of apples could be allowed to remain on the table and run off to the sizing line meant that only 2 grades (usually grade C and culls) needed to be lifted from the table. In Washington, apples are graded: "Combination" (extra fancy and fancy); Grade C; and culls.

The spiral roll table, which also has the run-off feature and rotation in connection with forward movement, had certain disadvantages. When it was heavily loaded, parts of the surface of some apples were obscured by other fruit and the apples had a tendency to skid on the rolls, with very little rotation.

The belt type table was found least efficient. Where this table has no run-off feature, and most in use did not, it served only as a means of getting the fruit in front of the workers. Each apple had to be picked up for examination and lifted to belts, for each of the three grades, running above the main table. This handling of all apples inspected limited the amount of fruit that could be sorted.

REVERSE ROLL TABLE IMPROVED

Studies seeking further improvements in the reverse roll table resulted in three major changes: (1) the table was divided so that a separate work lane was provided for each sorter; (2) the speed of forward movement of apples along the table was varied; and (3) cull disposal chutes were attached to the sides of the table at each sorting position.

The usual reverse roll table is 48 inches wide and generally is divided into three sections running the length of the table. Sorters on each side inspect the apples as they move by and remove the C grade and culls from the table, allowing the "Combination" grade to run off to the sizing line. This means that some of the apples left on the table generally are inspected a second and sometimes a third time by the sorters. In addition to this work duplication there is no way to fix individual responsibility among the sorters for proper grading of the fruit left to run off the table.

During the study, the work surface of the table was divided into six sections or lanes running the length of the table as explained in the illustration of the "improved" reverse roll table on page 9. After the lanes were installed each sorter was assigned a specific lane and instructed to sort only from that lane. Studies made after the lanes were installed revealed that efficiency of the sorters increased from 10 to 46 percent. This was attributed to: (1) Elimination of duplication in sorting; (2) development of a feeling of responsibility by the sorters; (3)

even distribution of work; (4) work of each sorter subject to check; (5) development of better sorting techniques; and (6) reduction of wrong decisions in grading. In addition, sorters themselves expressed a decided preference for the lanes and an obvious improvement in worker morale was noted when the lanes were used.

Trails also were conducted with the "improved" reverse roll table equipped with a variable speed drive attached to the rollers. Runs were made for at least a full day at different speeds ranging from 15 to 30 feet per minute. (Forward speed of the table in most plants is around 18 feet per minute.) While sorters at first objected to higher than usual speeds, they became accustomed to them within an hour or two and most preferred a rate of about 25 feet per minute. At this faster rate of operation it was noted that workers' movements quickened, inspection appeared easier and, most important, sorters faced toward the oncoming fruit, inspecting it at a point up the table as it approached rather than directly in front of them. This enabled them to see all of the product as it came toward them, rolling over and around, and resulted in improved grading.

Another labor-saving development was the installation of cull disposal chutes on the "improved" reverse roll table beside each sorter. (See illustration, page 9.) Ordinarily, the cull disposal belt is located over the center of the sorting table about 15 to 18 inches above its surface. To lessen disposal time and reduce worker fatigue, chutes were attached to the table on the side of the sorter toward the flow of fruit. In addition to inducing sorters to face the flow of fruit, which provided more thorough inspection, the chutes reduced the distance culls had to be moved for disposal, cutting cull disposal time about one-third. The chutes are so arranged that culls drop off onto a belt running under the table. Use of the chutes also tended to induce graders to use both hands in sorting. The hand nearest the cull chute was used to remove culls while the other transferred "C" grade fruit to the belt above the table.

OTHER EFFICIENCIES

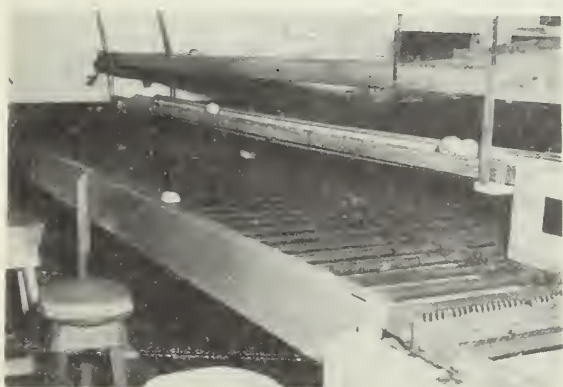
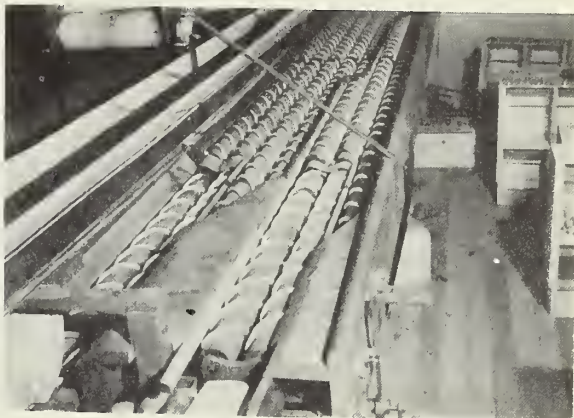
Two additional ways of increasing sorting efficiency were developed:

One, which applies only to the improved reverse roll table, has to do with the placement of additional sorters needed when poor quality fruit is being inspected. Usually, two additional sorters are placed at the end of the table nearest the sizing line; one on each side. In this position, they generally lift less than 15 percent of the total apples removed from the table because they spend most of their time inspecting apples that already have been examined by the sorters ahead of them. By using the two additional sorters at the head of the table and instructing them to scan the entire flow of fruit and remove obviously defective apples, the total volume of apples that can be sorted could be increased one-third. The other improvement, which can be used on all types of sorting tables as an aid in achieving a constant and optimum rate of production, is a chart which would enable packing plant operators to determine the number of boxes of apples which should be dumped for sorting during a given time period as the quality and size of the fruit varies. These charts were developed during the course of the research.



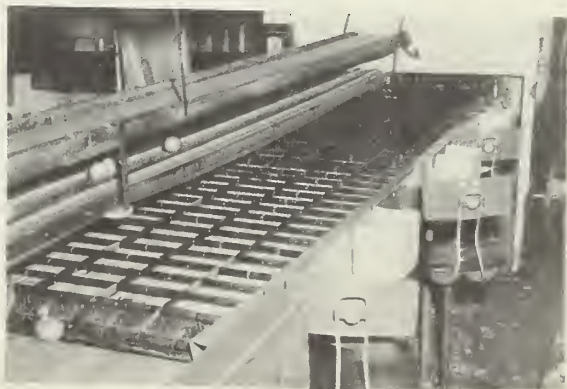
This is a belt type sorting table. Two broad main belts on each side of the table convey the fruit past sorters who pick up the apples and place them on smaller belts, running above the grading table, which carry them to a sizing machine. Fruit not removed from the main belts before reaching the end of the sorting table is diverted onto a smaller belt running in the opposite direction which returns it to the head of the table for another trip past the sorters.

The spiral roll table turns fruit as it is moved forward, permitting more complete and more rapid inspection. It usually is made of 5 wooden rolls on each side about $2\frac{1}{2}$ in. in diameter extending the full length of the table. A $\frac{1}{4}$ in. rope wrapped spirally around the rolls with about 3 in. between turns acts as a worm-screw to move the fruit forward as it is rotated by the rolls. Fruit not lifted from table by the sorters flows off ends of rollers to sizer.

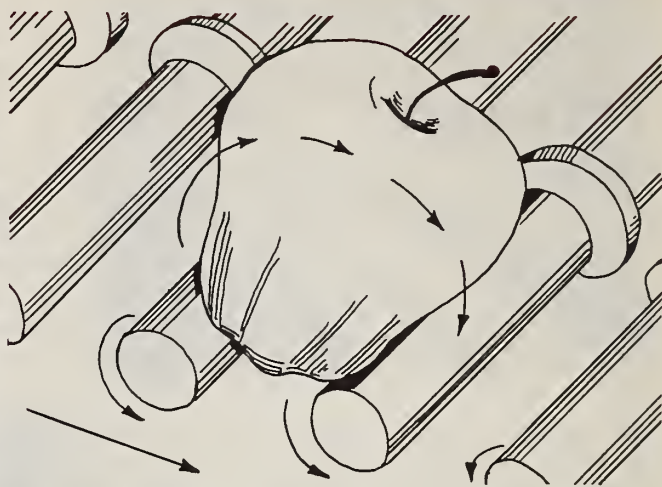


The reverse roll table is made of a metal frame with plywood bottom. Rubber rollers about 4 in. apart, extending full width of table, move like a conveyor chain pushing fruit along table. Gear arrangement causes rollers to rotate backwards as they move forward which turns fruit over as it moves toward sorters and permits inspection on the table. Apples not lifted from table move off the end to the sizing line.

Improved reverse roll table developed during study. Rollers have variable speed drive permitting forward movement of from 10 to 30 ft. per minute. Lanes, 8 in. apart, are provided by links between rollers which are flush with tops of rollers and prevent apples from rolling out of the lanes. White boxes on side of table are cull chutes which cut cull disposal time and reduce worker fatigue in grading operation.



This drawing illustrates operation of the new type sorting table developed by USDA sponsored research. Apples now move on top of smaller rubber rollers spaced closer together. Controlled as to forward speed and rotation rate, the rollers are divided into lanes by washers (as shown) or by small rods running full length of table above rollers. Spacing between rollers is such that flow of fruit is smooth and there is no piling up in the lanes.



Data obtained from studying improvements to the reverse roll table and observations of the research staff indicated that sorting efficiency could be further increased if the fruit was rotated on the grading table even more than was possible with the improved equipment. Having already controlled the speed of forward rate of movement of the fruit, the researchers planned to also control rate of rotation so that the best combination of both movements could be determined.

PREVIOUS SORTING RESEARCH

Readers of MARKETING ACTIVITIES probably will recall that basic research on a grading table which permits such control was conducted for USDA, also under an AMA contract, by the Institute of Engineering Research, University of California. ("One Good Turn. . .", MARKETING ACTIVITIES, July 1953.) The type of table used in the University of California experiments, consisting of a belt moving in the opposite direction of the rollers, which causes the fruit to rotate rapidly, was not tried for apples because it was felt that its action might injure the fruit.

On the basis of data obtained from studying improvements in the reverse roll table and their observations, the research team built several mock-up models of tables, seeking one that would give them better control of both forward speed of the flow of fruit and its rate of rotation as it moved past the sorters. As a result of this work they finally developed the type of table illustrated by the drawing at the top of this page. Instead of pushing the fruit along a plywood-bottom table, the rubber rolls are placed closer together and the fruit rides on top of them. Forward movement of the fruit is controlled through variations of the translation speed of the rolls. Rotation of the fruit is controlled by varying the rate at which the rolls turn to the rear as they move forward. The new table also is divided into lanes, either by the rubber washers shown in the drawing or by rods running the length of the table above the rollers. It also is equipped with cull chutes. Apples do not pile up in the lanes because the space between the rollers is such that fruit cannot ride between successive pairs of rollers. A prototype of this table has been tested in actual apple packing operations during the past season and preliminary reports are very encouraging.

Trends In Wholesale Trade In Horticultural Specialties

By Truman Fossum

The following preliminary report provides, for the first time, an analysis of economic trends in the trade of wholesale merchants of floricultural products. Covered are such things as sales by commodities, sales outlets, and types of transportation used by these wholesalers. This is the final in a series of three reports on preliminary studies dealing with marketing methods and practices of the floriculture and ornamental horticulture trades. Trends in wholesale selling by growers of flowers and by producers of nursery crops and bulbs were covered in the other two reports which were published in *MARKETING ACTIVITIES* earlier this year. The three reports are based on studies made by the Special Crops Section, Marketing Organization and Costs Branch, Agricultural Marketing Service, USDA.

The most outstanding change that has taken place in the wholesale florist trade during the past 15 year has been the spread of this business from a few large metropolitan centers into medium-sized and small cities following the development of the retail florist trade in these latter areas. Over the same period of time there have been an unusually large number of new comers to the trade.

However, to explain these and other economic changes which have taken place, it is necessary to have an understanding of the different types of wholesale dealers handling horticultural specialties. Generally, the situation is as follows:

1. Practically all of this trade is in floriculture - field and greenhouse grown crops used for decoration or personal adornment. However, the wholesale merchants handle only about half the floriculture stocks that are produced since growers sell a like amount direct to retailers.

2. That portion of floriculture production which moves through wholesale markets is handled by two distinct types of wholesalers. The smallest group, in either number of establishments or volume of business, specializes in supplying bulbs, plants, and seeds to commercial growers. The other and more generally known group of wholesalers are those making up what are identified as "flower markets" in most large cities. Their business largely is that of selling cut flowers, greens or foliage, and other supplies to retail florists.

3. Specialized wholesalers of cut flowers and greens or foliage most often identify themselves as "wholesale commission florists." In April 1954

many cases these middlemen of the wholesale market do business both as (a) merchants who take title to goods and depend for their gross profit on the difference between buying and selling prices and as (b) commission men who do not take title, but charge a fee for their services, remitting to the grower the selling price less this fee.

Sales

The study shows that of the establishments which reported and were in business in 1952 only one-half had existed in 1940. Though this may appear to be an unusual or biased sample it can be demonstrated that this situation is close to being typical from an industry-wide viewpoint. It must be emphasized that on this basis sales more than tripled between 1940 and 1952. This is in agreement with what has previously been reported for growers of flower and nursery crops. The distinction lies in the fact that given establishments qualifying for this study have not experienced the increase in sales which was found among growers.

Analysis shows that an exception is the extreme increases in sales of wholesale dealers in bulbs, plants and seed. This trend is confirmed by previous reports from growers among whom specialization in propagation and planting stock was obviously increasing. It should also be noted that this study does not include large and long established growers, particularly of cut flower crops, who also act as wholesale merchants for their own crops as well as the production of other growers. (See "Flower Wholesaling Trends," MARKETING ACTIVITIES, January 1954.

Commodities

Wholesale dealers in bulbs, plants and seed handled most, if not all, of the planting stock which increased from 2.5 percent of the wholesale trade in 1940 to 8.5 percent in 1952. Other major commodities sold by these wholesalers are bulbs and seeds reported in the item "other" which showed a consistent increase from 13.3 percent in 1940 to 16.1 percent in 1952. Potted plants and nursery stock make up negligible amounts of the sales of either these dealers or cut flower wholesalers.

Among wholesale merchants of cut flowers and cut greens the greenhouse crops continued to be of primary importance but in decreasing proportions. Greenhouse cut flowers accounted for 60 percent of the total in 1940, 50 percent in 1945 and 45 percent in 1952. Outdoor cut flowers maintained a stable relationship of 27 to 29 percent through this period of time. It must be remembered that this is not a quantity relationship or a measurement of how much was marketed, but a measurement based on value of quantities which were sold.

Wholesale Outlets

The retail florist is still the primary outlet for sales by wholesalers. However, there has been a decline in the volume of this business. In 1940, retail florists accounted for slightly over 84 percent of the total wholesale trade. In 1952, this was off to about 76 percent. This again confirms other evidence that there has been a distinct trend to-

wards specialization in propagation and the development of planting stock intended for "growing on" by commercial growers.

Slight increases in sales to wholesale florists took place from 1940 to 1952. This change occurred between 1940 and 1945 when the amount moved from 7.6 to 8.6 percent, a relative position which has been maintained through 1952. Amounts sold to sales yards and landscapers, though small, have remained quite constant. There have been increases in percentages of sales to department stores and mail order houses. These two outlets are still relatively unimportant in relation to retail florists but the trend has significance in relation to the future.

Kind of Transportation

Railway express has consistently been the most important means of transportation used by these wholesalers. But, except for a slight increase during World War II, such shipments dropped from nearly 47 percent of total value in 1940 to little more than 35 percent in 1952. Shipment or delivery by wholesalers' trucks has ranged around 18 to 20 percent of the volume except in the war years when it was down to 15 percent.

Use of air express and air freight has more than doubled. Less than 3 percent of the sales value was moved in this manner in 1940 whereas by 1952 the relative amount was 7.5 percent. Hired or leased trucks transported more than 10 percent of the sales in 1940 and about 8.5 percent at all times since 1945. Trucking companies and bus companies were transporting 3.2 and 4.7 percent respectively, of the sales in 1940. By 1952 each of these means of transportation was moving about 8 percent of the sales or an amount quite comparable to that for hired or leased trucks and air transport in that year.

Summary

Specialized wholesale trade in horticultural specialties has been and is undergoing transition and no longer is limited to a few large cities. In the past 15 years wholesale florists have been locating in medium to small sized cities, closer to the areas of final consumption.

This trend has followed a similar movement by the retail trade, which has changed its requirements for both goods and services as increasing amounts of business have been conducted outside the large cities. Changes in the wholesale trade, including that in the smaller cities, have been accelerated by rapidly decreasing service and increasing rates for railway express which has been the chief means of transporting cut flowers.

Dissatisfaction of growers with original wholesale channels has been a further cause of changes in horticultural specialty wholesaling. Some growers have by-passed these channels by setting up delivery routes or other means of doing business directly with retail outlets. On the other hand, the advent of air transport has stimulated development of wholesale shippers specializing in assembling and preparing crops for transportation over great distances; for example, from California to eastern cities or from Australia and Hawaii to all parts of the American mainland.

Floriculture and Ornamental Horticulture; Wholesale Trade: Establishments reporting and value of sales by commodities, wholesale outlets and kinds of transportation, specified years, 1940-52

Commodity

Item	1940			1945			1950			1952		
	Re- ports	Value 1000 dollars	Distri- bution Percent	Re- ports	Value 1000 dollars	Distri- bution Percent	Re- ports	Value 1000 dollars	Distri- bution Percent	Re- ports	Value 1000 dollars	Distri- bution Percent
	Num- ber			Num- ber			Num- ber			Num- ber		
Planting stock	3	223	2.5	4	938	4.9	4	1,589	6.2	4	2,483	8.5
Cut flowers, greenhouse	28	4,903	55.9	36	9,798	51.3	52	11,894	46.3	56	13,089	45.0
Potted plants, greenhouse	7	108	1.2	9	326	1.7	12	505	1.9	12	601	2.1
Cut flowers & greens, outdoors	29	2,339	26.7	38	5,158	27.0	56	7,401	28.8	59	7,959	27.4
Perennial herbaceous plants	--	--	--	1	9	.1	1	45	.2	1	60	.2
Ornamental woody plants	4	37	.4	4	114	.6	4	179	.7	4	209	.7
Fruit and nut trees	--	--	--	--	--	--	--	--	--	--	--	--
Small fruit plants	--	--	--	--	--	--	--	--	--	--	--	--
Other	--	--	--	--	--	--	--	--	--	--	--	--
Total wholesale business	9	1,164	13.3	12	2,749	14.4	17	4,083	15.9	19	4,683	16.1
	33	8,774	100.0	44	19,092	100.0	64	25,696	100.0	67	29,084	100.0
Wholesale Outlet												
Wholesale florists	16	672	7.6	19	1,639	8.6	29	2,224	3.6	29	2,451	8.5
Wholesale dealers	4	75	.9	6	497	2.6	7	460	1.8	7	401	1.4
Wholesale growers	4	315	3.6	5	1,034	5.4	7	1,658	6.4	7	2,203	7.6
Retail florists	32	7,397	84.3	41	15,215	79.7	59	19,957	77.7	62	22,142	76.1
Sales yards	3	142	1.6	4	238	1.2	5	403	1.6	5	470	1.6
Landscapers	1	7	.1	1	17	.1	2	73	.3	2	96	.3
Department stores	2	25	.3	3	72	.4	12	174	.7	13	301	1.0
Mail order houses	1	11	.1	1	24	.1	3	169	.7	3	207	.7
Other	4	130	1.5	4	356	1.9	5	578	2.2	5	813	2.8
Total wholesale business	33	8,774	100.0	44	19,092	100.0	64	25,696	100.0	67	29,084	100.0
Kind of Transportation												
Own trucks	16	1,597	18.2	19	2,895	15.2	32	5,090	19.8	35	5,293	13.2
Hired or leased trucks	2	938	10.7	3	1,611	8.4	7	2,139	8.3	9	2,433	8.4
Trucking companies	8	282	3.2	14	559	2.9	21	1,686	6.6	23	2,347	8.1
Bus companies	13	414	4.7	19	1,009	5.3	33	2,116	8.2	35	2,353	8.1
Parcel post	7	487	5.6	8	860	4.5	12	1,076	4.2	11	1,432	4.9
Rail express	22	4,096	46.7	31	9,096	47.7	46	9,363	36.4	48	10,414	35.8
Rail freight	4	91	1.0	7	598	3.1	8	730	2.9	8	651	2.2
Air freight	4	245	2.8	18	1,167	6.1	27	1,651	6.4	29	2,189	7.5
Air	7	624	7.1	10	1,297	6.8	12	1,845	7.2	12	1,972	6.8
Other	8	624	7.1	10	1,297	6.8	12	1,845	7.2	12	1,972	6.8
Total wholesale business	33	8,774	100.0	44	19,092	100.0	64	25,696	100.0	67	29,084	100.0

Quality Is Not In The Blood

By Dr. Lyle L. Davis

"Consumer acceptance" - an important phrase in all marketing - presents particular problems in each of the various branches of food merchandising. Whether a food product has this primary characteristic can be attributed to a number of things, but a deciding factor is appearance. In most food products this means it looks fresh, clean, and wholesome.

This is particularly true with respect to dressed poultry where the industry is constantly seeking - through research in new methods and equipment - to improve the appearance of its product. Acceptable appearance of dressed poultry begins with its slaughter. The amount of blood that is removed from the bird during this operation has a lot to do with the appearance of the dressed product. Furthermore, good bleeding has come to mean a step toward better quality in dressed poultry. Or, to put it another way, poor bleeding is a penalty factor in the grading of dressed poultry, along with other discolorations.

When chickens are incompletely bled, the blood that remains gives a pinkish cast to the skin, shows up in the capillaries in the breast, and, particularly, in the larger veins and arteries in the wings.

Time is Factor in Commercial Operations

It is possible, of course, to completely bleed a chicken, if enough time is available. Recommended times for this procedure range from $1\frac{1}{2}$ to 3 minutes. In modern poultry slaughter operations, however, speed is important on the processing line - both in the interest of efficiency and sanitation. A 20 to 22 second interval between the time the bird is killed and the scalding preparatory to picking is rather common in the broiler industry. It can be seen therefore, that the method of draining the most blood from birds in this short time interval is important to the poultry processing industry.

Several methods of slaughter and bleeding are used in the poultry industry and there is a continuing debate as to their relative efficiency. Now, for the first time, research, conducted at the Virginia Agricultural Experiment Station, indicates that of the currently used commercial slaughter methods the most efficient is that which involves stunning the bird and severing a single carotid artery and jugular vein. Certain other slaughter methods result in loss of a little more blood over the 20 second time interval but they also increase the danger of head separation during mechanical picking.

Previous research, dating back to 1923, has dealt with the loss of blood in relation to weight of chickens slaughtered by severing the jugular vein (3.8 percent of live weight lost as blood) and through decapitation (3.2 to 2.3 percent of live weight lost as blood). Later research has borne out these findings that beheaded birds lose significantly less blood than those killed through severing the jugular and carotid artery. This may surprise persons with a rural background whose association with poultry slaughter involved a chopping block and a hatchet, but it was again demonstrated in the research described in this article.

Research Procedure

The project at Virginia Polytechnic Institute was conducted by Marshall E. Coe, of the Virginia Agricultural Experiment Station and the author, formerly with that institution. It covered 50 white leghorn broiler males varying in weight from about $2\frac{1}{4}$ to nearly 4 pounds.

In the tests, the birds were divided into 5 lots and the live weight, to the nearest 10 grams, of each bird was determined just prior to placing them, head down, in a cone. In Lot 1, a single carotid artery and jugular vein was severed on the outside of the neck in such a way that the blood drained directly into a cup. After 20 seconds the cup was removed and the blood weighed to the nearest gram. After 3 minutes, the dead bird was removed from the cone, weighed, scalded at 130 degrees Fahrenheit, feathers were removed, and the bird was reweighed for New York dressed weight. In lot 2, the same procedure was followed except that the carotid arteries and jugular veins from both sides of the throat were severed without severing the windpipe. In Lot 3, the birds were beheaded. The heads were retained to provide a gross drained blood weight for each bird. In Lot 4, the birds were debrained and both carotid arteries and jugular veins cut from the outside without severing the windpipe. In Lot 5, the birds were stunned by hitting the side of their heads with a stick and severing a single carotid artery and jugular vein. The weight of blood lost in 3 minutes was measured by subtracting the dead weight after bleeding from the live weight. Each bird in all lots was checked closely after dressing to make sure that the method of bleeding was as outlined.

Results

Better bleeding occurred in 20 seconds from birds that were debrained and both carotid arteries cut (Lot 4), or both arteries cut (Lot 2), or stunned and a single artery cut (Lot 5), than from birds that were beheaded (Lot 3), or a single artery cut (Lot 1). Analysis of the data shows that differences in blood lost in 20 seconds between Lots 4, 2 and 5 were not significant. Differences between Lots 3 and 1 also were not significant for the 20-second bleeding time. When the blood was allowed to drain for 3 minutes, only Lot 3, in which the birds were beheaded, differed from the other lots. Poor bleeding was noticeable in Lot 3 after the birds were dressed. The skin was more pink, the capillaries in the breast were more noticeable, and the blood vessels in the wings were full.

In Lots 1 and 3 the blood lost in 20 seconds was only 2.31 percent and 2.40 percent, respectively, of the New York dressed weight. Lots 4,

5 and 2 showed a loss of blood of 3.13 percent, 2.88 percent and 2.86 percent, respectively, of the New York dressed weight. The blood lost in 3 minutes in Lot 4 was 4.75 percent; Lot 5, 4.3 percent, and in Lot 3, 3.85 percent, or roughly from about one-half to one-third of the total blood of the birds.

The improved bleeding in 20 seconds obtained in Lots 5, 4 and 2, under laboratory conditions, was apparent when tested under commercial conditions in that the skin was less pink and the blood vessels in the wings were considerably less noticeable.

Although debraining and cutting both carotid arteries and jugular veins caused the loss of more blood in 20 seconds than any other method, statistically it was not superior to methods that included stunning the bird and cutting a single artery or cutting both arteries. Debraining or stunning the birds may have advantages in immobilizing the birds under commercial operating procedures. When immobilization of the birds is of value in commercial processing plants, where the time from sticking to scalding the birds is 20 - 25 seconds, these tests show that the birds should be stunned mechanically and a single artery cut, or debrained and both arteries cut, if superior bleeding is desired.

BETTER MARKETING

In a recent address before the Peanut Industry Conference, here in Washington, True D. Morse, Undersecretary of Agriculture and President of the Commodity Credit Corporation, had this to say:

"We can sell our way out of the farm problem. That is a major reason why we have established a new 'Agricultural Marketing Service' in the U. S. Department of Agriculture.

"But, the selling job is primarily one for businessmen and industry. Government can help and is helping -- but our function is primarily one of 'service'. That is as it should be -- the selling should continue to be through operation of the free economy that has made America strong and the United States a great nation. . . .

"The big -- and most profitable -- market for farm products is right here in the United States. The domestic market is expanding rapidly due to the upsurge in population. Over 2.5 million more customers are added each year.

"But certainly no industry will be satisfied with a market expansion held merely to the rate of population growth. More aggressive selling . . . is needed. . . .

"Let's sell farmers out of surpluses, and into expanded markets. Let's sell consumers into more nutritious diets -- more energy, ambition and better living."

June Dairy Month

This June will be National DAIRY MONTH. It will be the high point of a nationwide campaign - already underway - to boost the sale of all milk products, in the interest of national health and the nation's economy.

The U. S. Department of Agriculture is lending its full support to this industry-sponsored merchandising campaign to encourage market stability in the vital dairy industry by stimulating increased consumption of milk products.

All elements of the dairy industry are joining forces in the 1954 JUNE DAIRY MONTH campaign. Dairy producers, processors, distributors, equipment suppliers and allied groups have pledged an all-out selling effort and are requesting the cooperation of all branches of the food processing, food service, and food distribution industries.

Several branches of USDA, among them the Extension Service, the Bureau of Human Nutrition and Home Economics and the Agricultural Marketing Service - are actively participating in the drive. The Department, through a special "Plentiful Foods" program, is cooperating in the merchandising drive by enlisting the support of the food trades, press, radio, television, and other information outlets. Dairy products are being featured in the list of "Plentiful Foods" for June, which goes to consumers, distributors, food advisers and those in charge of institutional, restaurant, and hotel feeding. Other information and pictures also are being prepared for the use of cooperating groups and by mid-May the Office of Information, USDA, will have a complete handbook for use in the dairy campaign.

With the national educational emphasis on foods that supply protein, minerals, and vitamins along with calories, the dairy industry and others, including nutritionists and health workers, are promoting wider use of dairy products by emphasizing their nutritional advantages. In this respect, for example, intensive effort will be directed toward increasing the consumption of milk to the quantities required daily for good health -- to 3 to 4 cups a day for children, and to 2 to 3 cups a day for adults. Last year (1953), as individuals we averaged less than a pint a day.

This phase of the campaign will emphasize that for good health milk is the necessary foundation of all diets. The human body uses the protein of milk for tissue building -- minerals for construction and maintenance of bones and teeth -- vitamins for health and growth. Milk is an important food for everyone - for young and old alike. If you have trouble getting to sleep, form the milk-at-bedtime habit. Milk will help you sleep the natural way, the healthful way. Drink at least three glasses of milk every day -- one at bedtime.

ABOUT MARKETING

The following addresses and publications, issued recently, may be obtained upon request. To order, check on this page the publications desired, detach and mail to the Agricultural Marketing Service, U. S. Department of Agriculture, Washington 25, D. C.

Addresses:

A Look At The Farm Market, Talk by Nathan M. Koffsky, Associate Chief, Agricultural Marketing Service, before the R.E.A. Power Use Conference, Edgewater Beach Hotel, Chicago, Illinois. March 11, 1954. 4 pp. (USDA) (Processed)

Reducing Milk Marketing Costs, by Robert E. Olson, Agricultural Economist, Market Organization and Costs Branch, at the Annual Meeting of the Northeastern Dairy Conference, Buffalo, New York. March 26, 1954. 10 pp. (Processed) (USDA)

Publications:

Directory of State Departments of Agriculture 1954, Compiled by U. S. Department of Agriculture. March 1954. 51 pp. (AMS) (Processed)

A Report of the National Marketing Service Workshop, Louisville, Ky. Nov. 17-20, 1953. (AMS) (Processed)

Indirect Estimates of the Solids-Not-Fat Content of Milk. The Basis for, and History of, Published Methods and Equations. 44 pp. (AMS) (Processed)

Federal Milk Marketing Orders (Questions and Answers) January 1954. (AMS) (Processed)

Prices of Wool at Boston. A Comparison of Prices of Domestic and Imported Wools by Albert M. Hermie, Agricultural Economic Statistician, Agriculture Information Bulletin No. 118. 41 pp. (AMS) (Processed)

Early Spring Lamb Crop - 1954. March 10, 1954. 2 pp. (AMS) (Processed)

Butter Oil, A Review of Literature. I. Food Product of the United States, II. Ghee.--Food Product of the Middle East. By D. R. Stroebel, W. G. Bryan, and C. J. Babcock. 22 pp. (AMS) (Processed)

Vegetable Guides for 1954. March 1954. 2 pp. (AMS) (Processed)

Operating the Brown-Duvel Moisture Tester, March 1954. Grain Division. 7 pp. (AMS) (Processed)

Experiments in Harvesting and Preserving Alfalfa for Dairy Cattle Feed, by J. B. Shepherd, H. G. Wiseman, R. E. Ely, C. G. Melin, W. J. Sweetman, C. H. Gordon, L. G. Schoenleber, R. E. Wagner, L. E. Campbell, and G. D. Roane, ARS, and W. H. Hosterman, AMS. February 1954. Technical Bulletin No. 1079. (AMS) (Printed)

Annual Report on Tobacco Statistics, 1953. December 1953. Statistical Bulletin No. 138. 71 pp. (AMS) (Printed)

Effect of Merchandising Schools on the Retail Practices and Sales of Poultry and Eggs by Harold D. Smith, Agricultural Experiment Station, College Park, Maryland. 31 pp. (Printed)

Agricultural LABOR in the United States, 1943-52. A Selected List of Annotated References, compiled by Josiah C. Folsom. March 1954. Library List 61. 170 pp. (AMS) (Processed)

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